TRIPLETT

INSTRUCTION MANUAL

MODEL 3413-A

TUBE TESTER

MANUAL ONLY - $ .75

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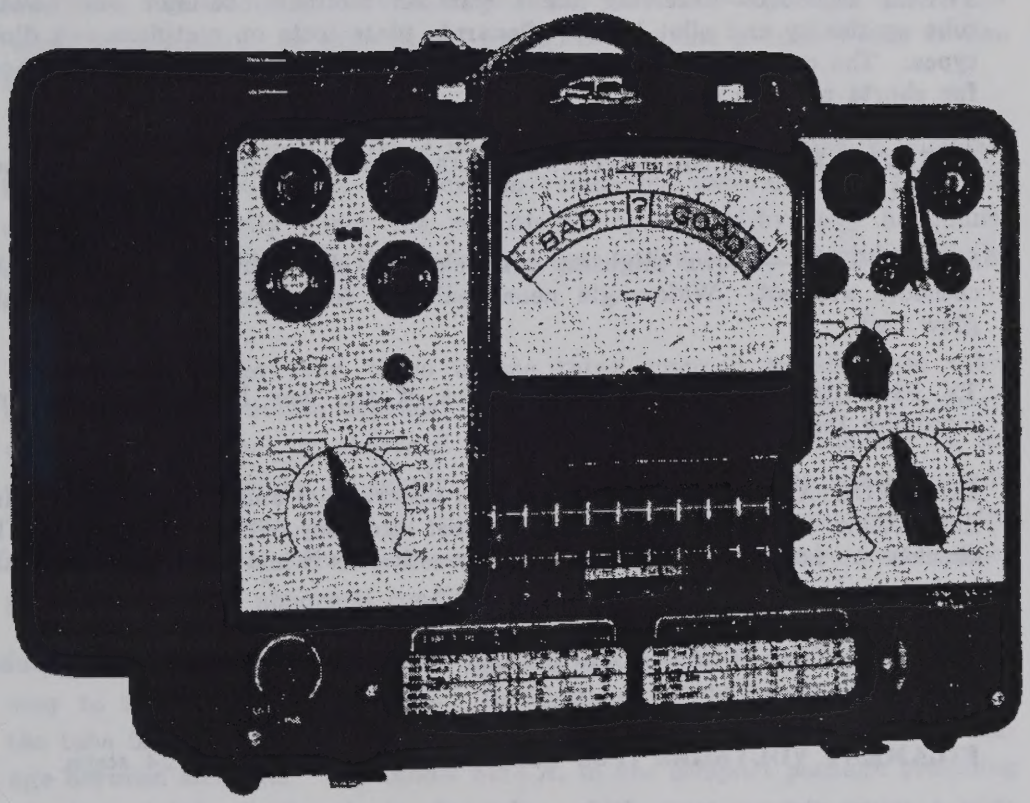


Model 3413A

Faster More Accurate Tube Testing

IMPROVED LEVER SWITCHING for complete control of each tube element. Gets at each tube pin to make an open and short check.

TUBES TESTED—Receiving tubes, gaseous rectifiers, resistor and ballast tube continuity and pilot lamps. Separate plate tests on rectifiers and diode types. The continuity test circuit may be used to check electrical appliances for shorts or open circuits.

GREATER METER SENSITIVITY for the new type tubes with low cathode current.

SHORT TEST—Shows slightest inter-element short or leakage while the cathodes are hot. Wide-angle neon indicator for greater visibility of the glow test.

TV PICTURE TUBE TESTS by means of the new BV adapter, without removing the tube from the receiver.

LINE VOLTAGE INDICATOR—Permits observation and adjustment for line fluctuations thereby insuring greater test accuracy. Line Voltage can be checked at any time by throwing snap-action switch for indication on the meter.

ILLUMINATED SPEED-ROLL CHART with test settings for over 700 tubes at the flick of a finger.

FILAMENT VOLTAGES (Full Range)—0.63 to 110 volts in 14 steps.

SHORT TEST for each element by a simple flip of the switch.

BIG 6-INCH METER, direct reading "BAD-?-GOOD" dial. Long-scale Model 626 adjusted to 500 Microamperes, 100 M. V. Exclusive RED ● DOT Life-time guaranteed against defects in workmanship or materials.

PANEL—Easy to read, red, black and white markings.

POWER SUPPLY—115 Volts, 50-60 cycle, A. C.

WEIGHT—20 pounds.

Tube Characteristics and Testing

The high stage of development of the radio tube art with its many variety of tubes has presented a definite problem to the technician in tube testing. In addition, the types of circuits and functions required of these tubes are continually changing. Previously, the common receiver consisted of amplifier tubes, an RF oscillator tube, mixer tube and detector tube. With improvements in AM and the advent of FM & TV, receiving tubes are required to perform additional functions as limiters, multivibrators, sweep oscillators, triggering action and other special functions. To accomplish some of these functions, the tube must be subjected to unusual operating conditions. In addition, differences between receivers impose a still wider range of conditions, as experienced by those who find a tube works in one set but not another.

The technician then is faced with the problem of procuring a universal tube testing device which will provide reasonable assurance the tube will operate satisfactorily under the conditions imposed. Obviously he cannot purchase a tester to test for each condition under which the tube will be subjected.

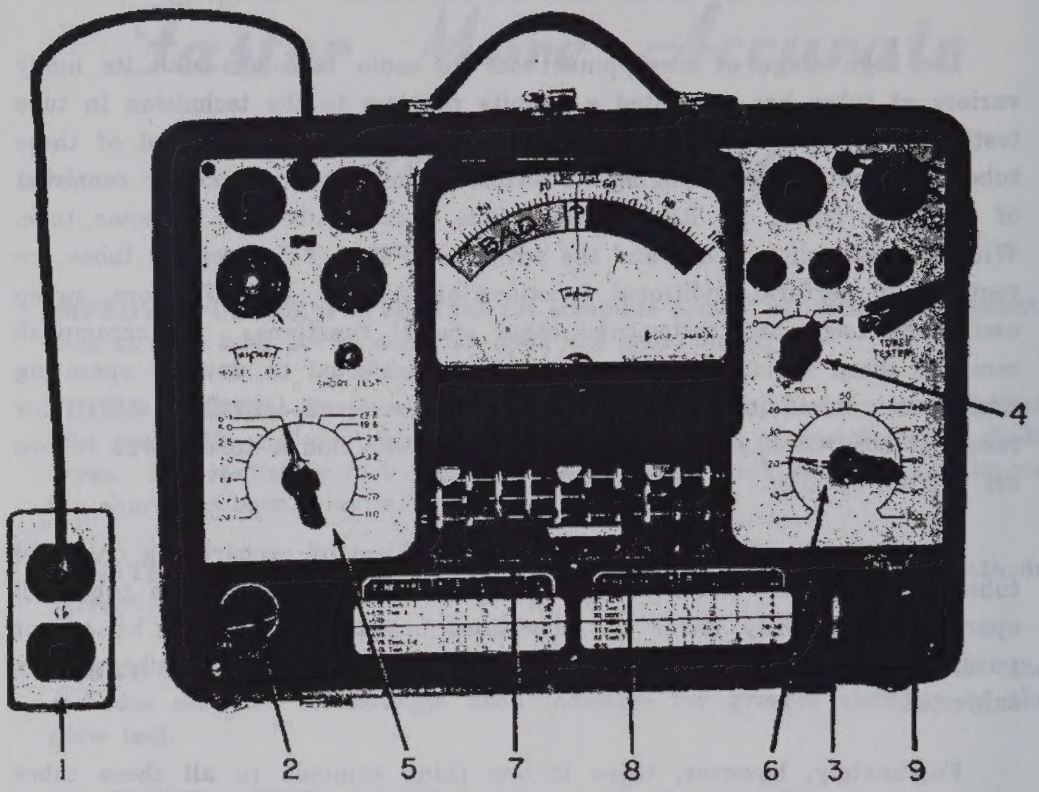
Fortunately, however, there is one thing common to all these tubes upon which performance depends, thus determining if the tube will operate under either normal or abnormal conditions. This is the condition of the cathode and its ability to supply electrons required for the space current. This does not mean that all tube characteristics are measured by the cathode emission, but it does form a good basis to judge tube performance under normal and abnormal conditions.

Your Model 3413-A employs the cathode condition test in a practical easy to read Good — Bad scale. In addition, the mechanical condition of the tube is easily tested, such as open elements, shorted elements, and leakage between elements. The Model 3413-A, in one compact package providing a universal tube testing device for tubes which must operate under a wide variety of conditions, is the easiest to operate.

The ever increasing variety of tubes for AM, FM, TV has established the need for complete flexibility in tube testers as made possible by the unique lever switch originated by Triplett.

This test combined with the facility to set up new tubes through the flexible Triplett lever switching and the ability to test the mechanical condition of the tube (open elements, shorted elements, leakage) in one compact package makes this a most practical and universal tube tester.

Operating Instructions



SETTING CONTROLS

1. Insert power cord into a 110 volt AC 60 cycle outlet.
2. Turn "LINE" control clockwise until pointer of meter rests over "line Test" mark.
3. Set roll chart to type tube to be tested.

   Example

Type Tube	A CIR.	B FIL.	C LOAD	U UP	D DOWN
6AU5	3	6.3	22	158	37

4. Set "A Circuit" switch to position number 3.
5. Set "B Filament" switch according to chart 6.3.
6. Set "C Load" to position 22 as shown.
7. Levers 1, 5 & 8 should be placed in the up position.
8. Levers 3 and 7 should be placed in the down position.
   Levers not listed in either column must be left in the center position. NOW insert tube in tester socket. After tube has had sufficient time to heat up check line voltage setting again. If necessary then reset control No. 2 so meter pointer reads at "LINE TEST" mark.
9. To test tube hold control No. 9 in "Value" position and read meter.

SHORT TEST

With all controls set according to the roll chart, one at a time, move each lever to the opposite position and return, this applies only to settings in light face type. If pin corresponding to lever number is shorted to an-

other pin or element the neon lamp "SHORT TEST" will have a bright red glow.

The above should be carried out on all levers listed in the light face type. Levers in the center position are not used for this type tube.

TUBES WITH INTERNAL PINS CONNECTED

LEVERS IN "UP" POSITION

All tubes which have internal connections, (as noted by dark face type in "Up" position) should be checked by moving these levers to the down position simultaneously. These elements should not indicate a short if this procedure is used.

LEVERS IN "DOWN" POSITION

The following tubes with dark face type levers in the "down" position should be checked by moving all levers listed below to the "Up" position simultaneously. These elements should not indicate short if this procedure is followed.

2E26	pins	1-4-6	1204	pins	4-6-8
6AK5	"	2-7	5636	"	2-8
6AN5	"	2-7	5651	"	2-7
6BC5	"	2-7	5654	"	2-7
6BE7	"	3-8	5662	"	2-5
6BV7	"	7-9	5686	"	1-3-8
6N4	"	2-6	5840	"	2-4-8
7B6	"	4-7	5899	"	2-4-8
7E6	"	4-7	5905	"	2-4-8
7W7	"	4-7	5908	"	2-8
			6028	"	2-7
12BY7	"	3-9	6146	"	1-4-6
12SG7	"	3-5	6169	"	4-5
12SH7	"	3-5	9001	"	2-7
14B6	"	4-7	9002	"	2-7
14E6	"	4-7	9003	"	2-7
14W7	"	4-7	9006	"	2-7
713A	"	3-5			
717A	"	3-5			
2729	"	2-7			

OPEN ELEMENT TEST

Set all controls and levers according to the roll chart for tube under test. With "TEST" knob control No. 9 in "Value" position, one at a time move each lever which is in the up position shown in light face type to the down position and return to correct setting. Continuity between tube pins or elements being tested is indicated by a change in pointer deflection. A small change denotes a satisfactory plate or screen connection. A large change will indicate a satisfactory grid connection. When there is only one lever in up position, no open element test need be made.

FILAMENT AND TAP CONTINUITY TEST

* Asterisk shown after tube type.

Set all controls and levers according to the roll chart EXCEPT "B Filament" switch which must be set at 0.63 position for this test.

One at a time move each lever shown in DARK FACE type on chart to the opposite position and return to chart setting. For example, type 35W4 has 4 and 6 shown in dark face type down.

Move lever number 4 to the up position and return to down position. Then move lever number 6 to up position and return to down position. In testing continuity the "SHORT TEST" neon lamp will indicate "GOOD" by a bright red glow.

PILOT LAMP TESTING

(Pilot lamps and other miniature base lamps.)

A With the line cord connected, set "LINE" control No. 2 so the meter pointer will read on "Line Test" mark.

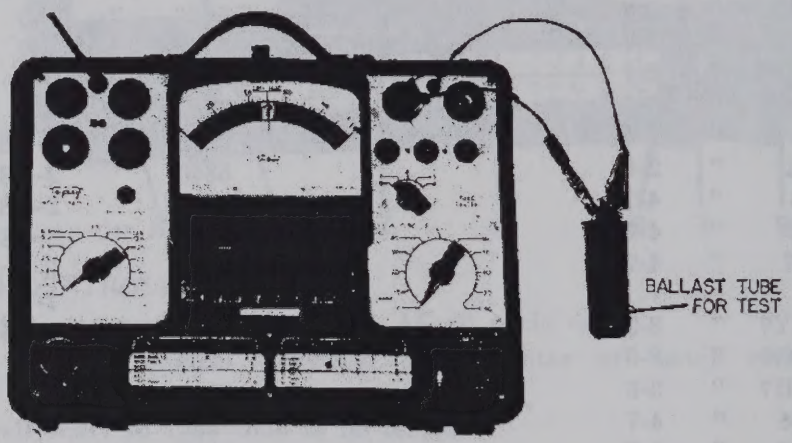
B Set control No. 5 "B Filament" to correct voltage of lamp to be tested.

C Insert lamp in socket in center of large 7 prong socket.

D A "GOOD" lamp is indicated by normal lighting of its filament.

BALLAST TUBE CONTINUITY TEST

With line cord connected set "LINE" control No. 2 so the meter pointer will read on "Line Test" mark.



Set controls No. 2 "B Filament", No. 4 "A Circuit" and No. 6 "C Load" to 0 or off position. Lever number one up and lever number 0 down position. Connect a short jumper lead to pin one of the octal socket (Marked with a short line on panel). Short grid cap lead and jumper lead together and note that the neon lamp glows. Connect grid cap clip and jumper lead to pins of ballast tube or to terminals of appliance being tested. A bright glow of the neon lamp indicates continuity.

CAUTION: Do not handle the metal parts of the test lead during the test.

Refer to the ballast tube or appliance manufacturer's data for internal connections.

TESTING MULTI-PURPOSE TUBES

Some multi-purpose tubes require more than one test. An example is a type 6H6. Notice test information given on the roll chart for this type tube. "Tests 1-2" following the tube type means that two tests are necessary, and that all information for making these two tests is found in

the same line on the roll chart. A dash is used to separate information used in "Test 1" from information used in "Test 2." Using test information for a type 6H6 in the following example, all information not used in "Test 1" is ignored.

Chart Reads:	A	B	C	U	D
6H6 Tests 1–2	1–1	6.3	25–25	3–5	47–78
For Test 1 use:	1	6.3	25	3	47
For Test 2 use:	1	6.3	25	5	78

When information for two tests is given on a single line, this information is separated by a dash. Information for "Test 1" is found to the left of this dash, and information for "Test 2" is found to the right of this dash.

Notice that the "B-Filament" setting will always be the same though a tube may have one, two, three or more separate tests.

Refer to information given for a type 6SQ7. This tube requires three separate tests. Space permits giving information for only "Tests 1 and 2" on the first line. Information for "Test 3" is given on a second line.

SPECIAL NOTES APPEARING ON ROLL CHART

Special notes on the chart refer **only** to the type tube preceding the notation. For example, notice the note which follows a type 35B5. Also, notice the note which follows Test 2 for a type 117N7. This note applies only to Test 2 for this tube.

A note appearing on roll chart such as: "(Good=40)", etc., indicates that a reading of 40 or higher is satisfactory. (See type 2Y2 as an example. Another example is a type VR-75. A reading of 10 or better is satisfactory for this tube.)

Some tubes, such as VR-75 have more than one type designation. The preferred type number is given first, followed by the less common type number in parenthesis. In the case of a type VR-75, this tube is sometimes referred to as a type OA3 and is therefore listed as VR75 (OA3).

For information a cross reference listing of these tubes with two type numbers is given:

Tube Type	Listed Under	Tube Type	Listed Under
0A3	VR-75	CK568AX	CK5677
0B3	VR-90	CK569AX	CK5678
0C3	VR-105	CK605CX	CK5702
0D3	VR-150	CK608CX	CK5703
1F7GV	1F7	CK619CX	CK5744
4S	2S/4S	CK1006	1006/CK1006
6A4	6A4/LA	1201	7E5
6AB5	6N5	1203-A	7C4/1203A
6Q5	884	1232	7G7
6U5	6G5	1291	3B7
12B7	14A7	1294	1R4
12Z5	6Z5/12Z5	1299	3D6
25S	1B5	1642	2C21/1642
44	39	1852	6AC7
45Z5	40Z5	1853	6AB7
51	35	2051	2050
82V	82	2523NI	128A/2523NI
83V	83	5654	6BC5
84	6Z4	8016	1B3
G84	2Z2	A	866
V99	99V/V99	AS	57A
99X	99	ECL-80	6AB8
X99	99	EF-80	6BX6
117M7	117L7	G-2	2S/4S
123HY	113HY/123HY	G-84	2Z2
145HY	115HY/145HY	KR-1	1V
482-B	182-B	KR-5	6A4/LA
483	183	KR-25	2A5
485	484	KR-98	6Z4
GL-502-A	502-A/GL502-A	PL-83	15A6
585	50	V99	99V
879	2X2	XXB	3C6
951	1B4P	XXD	14AF7
CK556AX	CK5676	XXL	7A4

The letters "CL" appearing under Test 2 for tuning eye tubes indicate that the tuning eye shadow should be closed during this test (No meter reading will be observed). The letters "OP" under Test 3 for tuning eye tubes indicate that the eye shadow should be open during this test. (Tube type 6E5 is an example.)

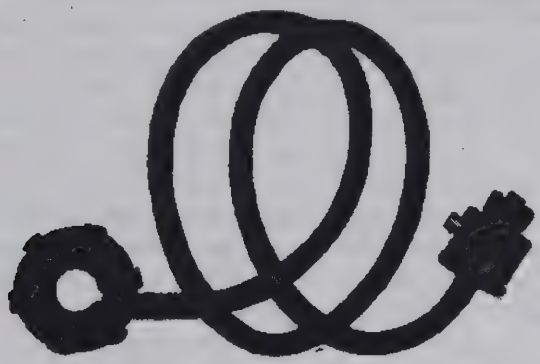
A few special tubes have more than one top cap. A type G15HY is an example. When testing this tube, a wire jumper is connected between the two top caps, and the top cap test lead is clipped onto one of the tube's top caps.

Notes such as "(Adapt BR)" mean that a special adapter "BR" must be used in testing these tubes. Since these adapters are seldom, if ever, used in Radio and TV work, they are not included with your instrument. They may be obtained from your distributor on special order.

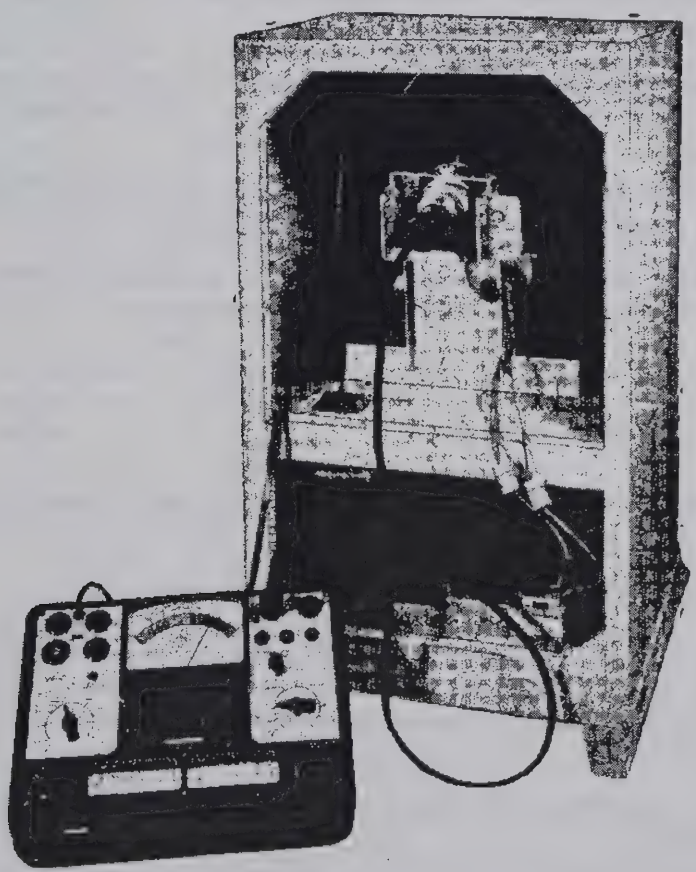
An asterisk (*) following a tube type indicates that filament and tap continuity test should be made for this tube.

For TV Picture Tube Tests—BV Adapter

With the BV adapter, Model 3413A will test every tube in a TV receiver INCLUDING the Picture Tube. A picture tube can be tested right in the shipping carton or in the receiver without removing the tube, as shown in the picture to the right. A time saver and safety factor



Service men with TV experience know that picture tube failures cause a low percentage of TV set failures. So why pay a high price for a unit that will test only CR and Picture Tubes when Triplett Model 3413-A and a BV adapter will test every tube in the TV receiver including the picture tube. With the BV adapter you are testing the spacing of elements and with the Electron Gun in operation reading cathode emission.



The same steps are used in testing TV picture tubes as any receiver type tube.

Supplied with each BV adapter is a data sheet for setting control and levers on the model 3413-A tester.

Picture tubes that have been in use for a year or two may test down in the Red or Bad but in many cases this means only the emission is below normal. Many picture tubes which show low emission will still operate but not as good as a tube with normal emission.

GENERAL NOTES

In order to keep the cost of your tube tester within reach of every serviceman, the special tube sockets for the acorn tube and the round subminiature have been left off your tester, since these types are not generally used. If you should find it necssary to check these types, adapters are available. (See Special Adapter Listing at bottom of page 13.)

Pointer indication above full scale indicates tube is extremely good or more than 130%. To make element continuity check on these tubes, turn lead control "C" so that pointer falls within end scale markings and proceed with continuity tests.

The jumper lead referred to in "CONTINUITY TEST" is not supplied with tester but may be obtained from your distributor on special order (Part No. T-2566-2, with clip T-79-29.)

The seven pin sub-miniature socket is used for 5, 6 and 7 prong tubes. Place the red dot on the tube to the extreme right to match the dot on the socket.

Cathode to heater leakage is indicated by a faint glow of the "SHORT TEST" neon lamp when making short test operation (8).

Lever markings 1 through 9 designate RMA tube pin numbers 1 through 9 respectively. Lever "O" designates the top cap connector.

TUBE SUFFIX LETTER SYMBOLS

In general, tubes with suffixes as noted below can be checked by using the set up for the tube without that suffix.

The letter G indicates a glass tube with an octal base.

GT Indicates use of a T-9 bulb. Y Indicates an "Intermediate loss' base.

The letters A, B, C, D, E, and F used in sequence indicate improved versions unilaterally interchangeable with the prototype or its subsequent versions.

W Indicates a military type and is assigned only on behalf of the armed forces.

CK are the prefix letters for some Raytheon subminiature tubes.

Instructions for Making Chart Listings

NEW TUBE TYPES

From time to time, supplementary tube data will be available to cover new tube types. Until this data is set up, the following may be used to obtain preliminary chart settings.

Use 3 or more new tubes and proceed as follows:

(A) Refer to manufacturer's handbook under the particular tube type for filament voltage and pin connections.

(B) Set "A-CIRCUIT" switch as follows:

"0" For tubes with cathode current below 1.5 Ma, generally subminiature types.

"1" for tubes with cathode current from 1 to 4 Ma, generally diode types.

"2" for tubes with cathode current from 3 to 15 Ma, generally filament types excluding diodes.

"3" for tubes with cathode current above 8 Ma. generally indirectly heated (cathode) types excluding diodes.

"4" for target or eye tubes, gaseous rectifiers and gaseous control tubes.

(C) Set "B-FILAMENT" switch to filament voltage.

(D) Refer to base drawing in "Manufacturer's Handbook" on tubes for the type being set up. Levers "1234, etc." compare to RMA pin numbers.

(E) Set all levers in normal or center position. This is one of the "FILAMENT" positions and all elements in this position are tied together.

(F) Find the first filament connection pin on tube base and leave corresponding lever in center position. This connects one side of filament to the filament transformer.

(G) Find the second filament connection pin on tube base and move corresponding lever to "D" position. This connects the opposite side of the filament to the filament transformer. If filament is tapped at center, move corresponding filament pins to connect the two sections of filament in parallel. If filament has a panel lamp section, move the levers corresponding to this section to "D" position.

(H) Find the cathode connection pin on tube base and move corresponding lever to "D" position. This connects the cathode to one side of the filament transformer.

(I) If the tube is of the multi-section type such as duodiodes, duotriodes, etc., find the elements not under test and move corresponding levers to "D" position.

(J) Move all levers corresponding to the other active elements under test to "U" position.

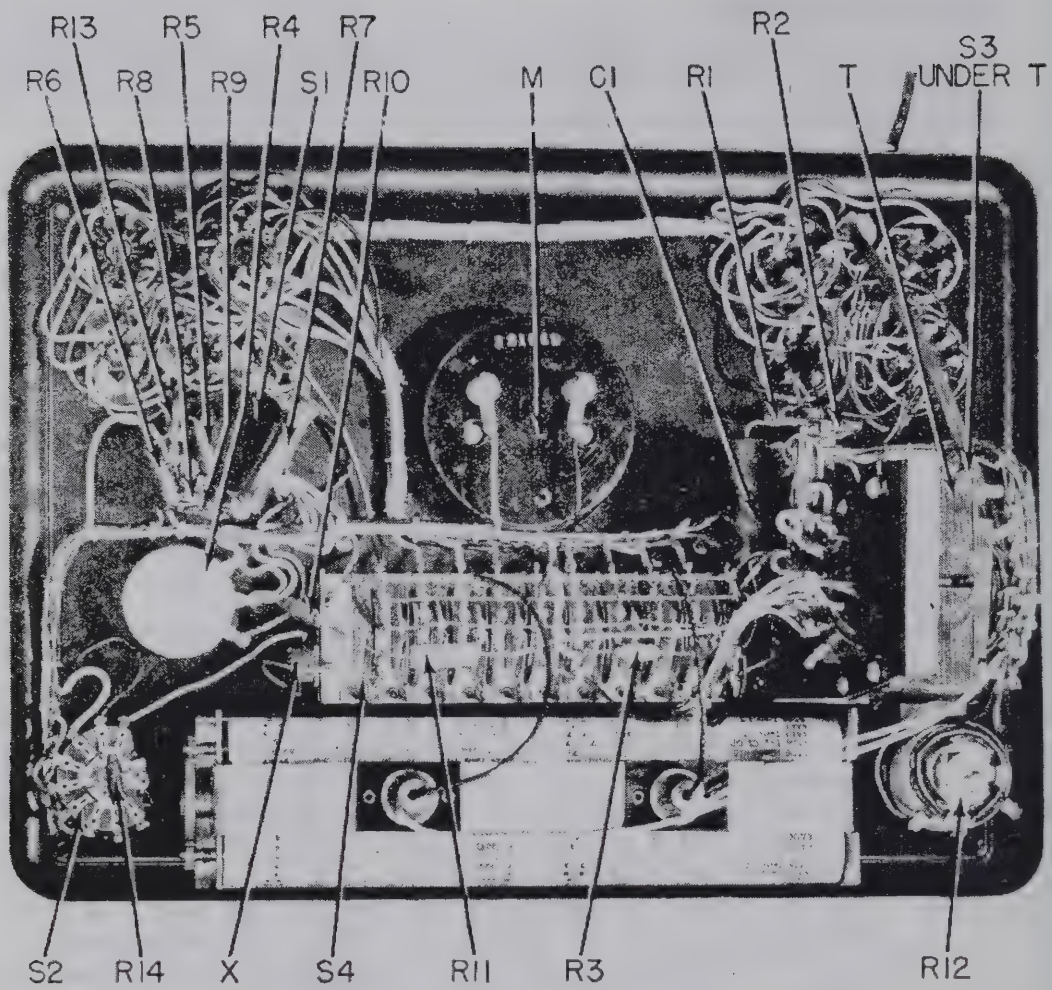
(K) Insert tube into proper socket.

(L) Turn on "LINE" control and adjust so that meter reads at "LINE TEST" mark.

(M) Hold "'TEST" switch in "'VALUE" position. Adjust "C-LOAD" control for each tube so that the majority of the new tubes read 70 on the meter scale.

(N) List settings in the book for further reference.

Parts Location



Maintenance

A Triplett 3413-A Tube Tester will require very little or no maintenance.

From time to time there will be a new roll chart to install. This will only be a few minutes work if you follow these instructions.

A. Remove the four screws in the corners of the front panel. Remove back case.

B. Lay tester face down on bench.

C. Roll chart to the extreme end on top roller.
Remove tape holding chart to bottom roller.
Pull out old chart and remove tape from top roller.

D. Thread new chart under bottom roller up to top roller and tape chart to roller. Take special care that the chart is taped straight on the roller. Roll chart on top roller very loosely. Now tape bottom of chart to the bottom roller. If the chart has not been rolled loosely on the rolls it will bind when rolled to the extreme ends.

The chart lamps sockets may be removed from the bracket to replace lamps.

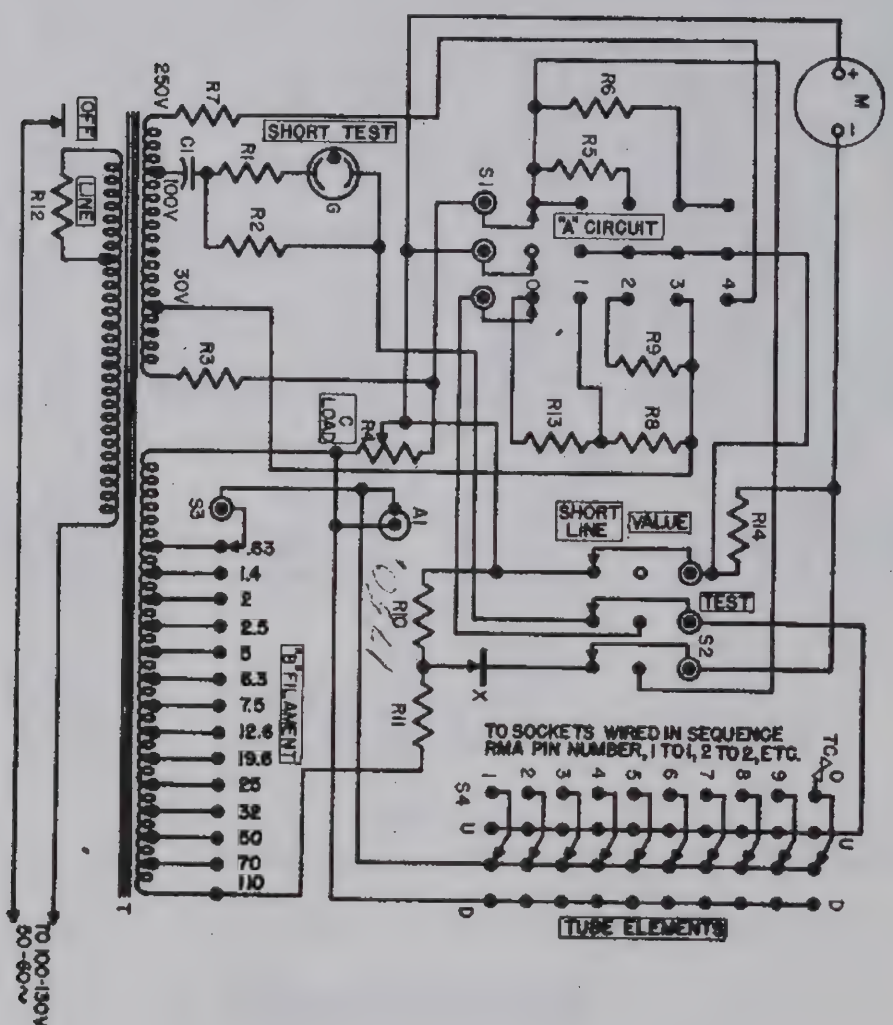
Replaceable Parts 3413A

Ref. No.	Quan.	Part Name	Description	Triplett Part No.
C1	1	Capacitor	0.1 MFD 400 DC WV	T-2631-P27
R1	1	Resistor	100K ohm, ½W, ±10%	T-2601-½-100K
R2	1	Resistor	270K ohm, ½W, ±10%	T-15-1885
R3	1	Resistor	50 ohm, 1W, ±1%	T-15-1248
R4	1	Resistor	200 ohm, variable	T-16-7
R5	1	Resistor	450 ohm, 1W	T-15-1249
R6	1	Resistor	1800 ohm, 1 W.	T-15-1251
R7	1	Resistor	2.5K ohm, 7W	T-15-2471
R8	1	Resistor	5K ohm, 1/2W, ±1%	T-15-1009
R9	1	Resistor	1K ohm, 1/2W, ±1%	T-15-1011
R10	1	Resistor	1.75K ohms, variable	T-15-62
R11	1	Resistor	68K ohm, ½W, ±1%	T-15-2487
R12	1	Resistor	175 ohm, variable, 25W	T-16-29
R13	1	Resistor	10K ohm, 1/2W, ±1%	T-15-1014
R14	1	Resistor	200 ohm, 1W	T-15-1858
S1	1	Switch	14 pos., 3 deck, 5 active pos	T-22A-177
S2	1	Switch	3 pole, double throw, 1 deck	T-22A-169
S3	1	Switch	20 pos., 1 deck, 15 active pos	T-22A-178
S4	1	Switch Assem	3 pos., lever, 10 decks	T-22-268
T	1	Transformer	110V, 19 sec. taps	T-23B-90
X	1	Rectifier	Copper oxide, 1/2 wave, 2 lead	T-2248-1
G	1	Lamp	Neon, 1/25W, GE	T-3024-2
M	1	Instrument	0-500 UA 100 Mv	T-52-661
	1	Case	Tester housing with hardware	T-10B-1014
	1	Cord	Line, 7 ft., black	T-2566-11-7
	10	Knob	Black, for element switches	T-34-37
	3	Knob	1 1/4" bar, black	5804
	2	Knob	2" bar, black	T-34-6
A1	1	Socket	7 prong, black	T-2455-171
	1	Socket	Bantam, 6 prong, black	T-2455-58
	1	Socket	9 prong, miniature, black	T-2455-92
	1	Socket	4 prong, black	T-2455-4
	1	Socket	5 prong, black	T-2455-5
	1	Socket	6 prong, black	T-2455-6
	1	Socket	Loctal, 8 hole black	T-2455-8L
	1	Socket	7 prong, miniature, black	T-2455-59
	1	Socket	Octal, 8 hole, black	T-2455-8
	1	Socket	5, 6, & 7 prong, subminiature	T-2455-80
			ABOVE SERIAL 9036	

Special Adapters

ADAPTER	TUBE TYPE	PART NO.
BV	TV Picture Tubes	T-2247-BV
BR	Acorn Tubes	T-2247-BR
BW	Round Subminiature	T-2247-BW

Wiring Diagram, Model 3413-A



(* (after tube) denotes tapped filament — see instructions.)

TUBES WITH INTERNAL PINS CONNECTED

Tube types (□) symbol shown indicates that the tube has pins internally connected. To check these tubes for shorts you should refer to a tube base diagram such as in the Tung-Sol, RCA, etc. base diagram booklets and note which pins are internally connected. To test for shorts, the corresponding levers of the internally connected pins should be moved simultaneously. For emample:

	A	B	C	U	D
2E26 □	3	6.3	21	350	**1246**
45Z3 □	3	50	24	**26**	47

You will see in the base diagram of the 2E26 that pins 1, 4, and 6 are internally connected. When these three levers are moved to the up position simultaneously they will not show short. Although pin 2 is shown in dark face type, it is one end of the heater. If pin 2 did not show short it would indicate an open heater.

In the base diagram of tube 45Z3, you see that pins 2 and 6 are internally connected. When these two levers are moved to the down position simultaneously they will not show short. The same thing applies to pin 7 of this tube as applied to pin 2 of the 2E26.

The Triplett Electrical Instrument Co.

Bluffton, Ohio

Printed in U. S. A. Part No. 84-70-020162

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
7729*	1	6.3	20	12	345
7729 Test 2	1	6.3	20	67	458
7730*	2	6.3	25	12	345
7730 Test 2	2	6.3	25	67	458
7731	2	6.3	22	19	58
(No open element test on pin 6)					
7731 Test 2	2	6.3	22	236	57
(No open element test on pin 6)					
7732	2	6.3	22	1567	23
(No open element tests on pins 5 & 7)					
7733* □	3	6.3	17	278	13459
(No open element test on pin 7)					
7738 □	2	6.3	22	1267	45
7803	2	6.3	22	12	35
7803 Test 2	2	6.3	22	67	58
7867	4	6.3	18	580	37
7887	2	25.0	23	78	56
7887 Test 2	2	25.0	23	12	46
7888	2	25.0	22	18	56
7889	0	25.0	64	78	56
7889 Test 2	0	25.0	64	12	46
7895 Adapt CI	1	6.3	20	12	35
9001 □	1	6.3	20	156	247
9002 □	2	6.3	27	156	247
9003 □	2	6.3	27	156	247
9006 □	1	6.3	25	15	247
AF Tests 1-2	3-3	2.5	24-24	2-3	4-4
AG Tests 1-2	3-3	5	26-26	2-3	4-4
G-4 Tests 1-2	1-1	2.5	45-45	3-2	45-45
GA	3	5	32	234	5
PZ	3	2.5	41	234	5
PZH	3	2.5	36	234	56
R-30	2	2	35	23	4
R-100	3	7.5	43	0	4
(Short Top Caps Together)					
RK-33 Tests 1-2	3-3	6.3	27-27	45-30	67-27
RK-34	3	6.3	27	50	47
(Top Cap Lead on Left Top Cap)					
RK-34 Test 2	3	6.3	27	30	47
(Top Cap Lead on Right Top Cap)					
RK61	0	1.4	77	13	2
WL-481	4	2.5	59	0	4
WX-12	1	1.4	55	23	4
WND. A	3	6.3	35	23	456
WND. C	3	2.5	35	23	456
XXFM	1	6.3	20	23	478
XXFM Test 2	1	6.3	27	5	48
XXFM Test 3	1	6.3	27	6	78
Z2000 Tests 1-2	1-1	6.3	22-22	25-16	37-37

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
7055	2	12.6	23	7	14
7055 Test 2	2	12.6	23	2	45
7056	2	12.6	21	1567	24
7057	2	12.6	22	67	58
7057 Test 2	2	12.6	22	12	35
7059	2	12.6	23	236	57
7059 Test 2	2	12.6	21	19	58
7060	2	12.6	28	678	59
7060 Test 2	2	12.6	23	12	35
7061 □	3	12.6	22	13689	57
7062 *	2	6.3	21	67	98
7062 * Test 2	2	6.3	21	12	39
7105	3	12.6	15	12	38
7105 Test 2	3	12.6	15	45	68
7119 *	4	6.3	18	79	456
7119 * Test 2	4	6.3	18	12	345
7137 □	2	6.3	22	1567	24
7189 *□	4	6.3	17	1279	35
7199	1	6.3	19	237	56
7199 Test 2	2	6.3	21	19	58
7233 □	3	6.3	17	123679	58
7239 □	2	6.3	25	160	2579
CK7246	1	1.4	21	13	4
7247 *	0	6.3	64	67	458
7247 Test 2	2	6.3	25	12	345
7308	1	6.3	20	12	35
7308 Test 2	1	6.3	20	67	58
7316	2	6.3	24	12	39
7316 Test 2	2	6 3	24	67	89
7355	3	6.3	19	368	57
7360	1	6.3	21	2367	1589
7408	3	6.3	24	345	178
7543	1	6 3	20	1256	37
7551 □	3	12.6	19	23678	159
7558 □	3	6.3	19	23678	159
CK7576 □	2	6.3	22	23457	68
7581	3	6 3	21	345	78
7591 □	4	6.3	19	3468	57
7719 * □	1	6.3	21	1267	345
7607 □	4	6.3	19	350	1467
7701 □	3	12.6	26	2679	1358
(No shorts or element test on pins 1, 3, & 8)					
7716	2	12.6	22	789	56
7716 Test 2	0	12.6	63	23	15
7717 □	2	6.3	21	156	247
7728*	2	6.3	24	12	39
7728 Test 2	2	6.3	24	67	89

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
5920/E90CC	2	6.3	21	25	47
5920 Test 2	2	6.3	21	16	47
6026 (Adapt BW)	2	6.3	22	78	35
6028/408A □	2	19.6	22	156	247
6084/E80F	1	6.3	21	1689	35
6096 □	1	6.3	20	156	247
6152	2	6.3	22	13	25
6159 □	3	25.0	17	350	14678
6203	1	6.3	21	1	579
6203 Test 2	1	6.3	21	9	157
6206 □ (Adapt BW)	2	6.3	23	1457	268
6293 □	3	6.3	18	350	1467
6336	4	6.3	18	45	68
6336 Test 2	4	6.3	18	12	38
6350	1	6.3	20	13	245
6350 Test 2	1	6.3	20	68	457
6397 * (Adapt BW)	2	1.4	26	368	5
6418	0	1.4	74	124	5
6485	2	6.3	22	1256	47
6520	3	6.3	16	12	38
6520 Test 2	3	6.3	16	45	68
6526	1	1.4	22	124	3
6659	4	OFF	38	1	5
6661	2	6.3	22	1567	23
6678	2	6.3	22	19	58
(No open element test on pin 6)					
6678 Test 2	2	6.3	22	236	57
(No open element test on pin 6)					
6688 □	2	6.3	21	2789	135
6889/E83F	2	6.3	20	1269	35
6788 □ (Adapt BW)	0	6.3	66	157	2468
6814 (Adapt BW) .	2	6.3	22	18	56
6887	1	6.3	20	2	45
6887 Test 2	1	6.3	21	7	14
6888	1	6.3	20	3468	57
6919	0	6.3	61	7	14
6919 Test 2	0	6.3	61	2	45
6922	3	6.3	17	67	589
6922 Test 2	3	6.3	17	12	359
6945 □ (Adapt BW)	3	6.3	23	157	2468
6954	1	6.3	20	1567	24
6973 □	4	6.3	19	13689	57
7025	1	6.3	20	12	345
7025 Test 2	1	6.3	20	67	458
7027 □	4	6.3	18	13456	78
7044 *	2	6.3	19	12	345
7044 Test 2	2	6.3	19	79	645
7054 □	2	12.6	21	23789	15

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
81	3	7.5	75	2	4
UBC81	0	12.6	66	12	35
UBC81 Test 2	1	12.6	66	6	35
UBC81 Test 3	1	12.6	66	8	35
82 (82V)	3	2.5	24	2	4
82 Test 2	3	2.5	24	3	4
83 (83V)	3	5	26	2	4
83 Test 2	3	5	26	3	4
EL84/6BQ5	1	6.3	20	1279	35
85 Tests 1-2	3-1	6.3	45-47	20-3	56-56
85 Test 3	1	6.3	47	4	56
86M	3	6.3	37	35	78
87S	2	6.3	33	230	456
KT88	4	6.3	18	345	78
88M	3	6.3	31	340	578
88 Tests 1-2	3-3	5	26-26	2-3	4-4
88S	3	6.3	32	230	456
89	3	6.3	32	230	56
UF89	2	12.6	23	278	359
E92CC	1	6.3	20	25	1467
E92CC Test 2	1	6.3	20	16	2457
95	3	2.5	36	234	56
98 Tests 1-2	3-3	6.3	26-26	2-3	45-45
99 (99X X99)	2	2.5	65	23	4
99V/V99	2	2.5	65	13	4
407A	1	19.6	20	34	129
407A Test 2	1	19.6	20	67	189
408A	1	19.6	20	156	247
CK527AX	0	1.4	75	124	5
CK534AX	0	.63 (Good = 40)	89	124	5
1237	2	2.5	26	3	7
	(Pins 3 & 6 show short)				
1237 Test 2	2	2.5	26	6	7
	(Pins 3 & 6 show short)				
4604 □	4	6.3	19	350	146
5591/403B □	2	6.3	25	156	247
5641 (Adapt. BW)	1	6.3	22	248	56
5679 *	3	6.3	31	3	128
5679 Test 2	3	6.3	31	6	178
5694	2	6.3	25	34	17
5694 Test 2	2	6.3	25	56	78
CK5704	0	6.3	64	1	34
5823	4	Off	33	1	347
5839	3	25.0	30	5	78
5839 Test 2	3	25.0	30	3	78
CK5847	1	6.3	21	168	49
CK5886	0	1.4	80	127	4

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
35GL6	2	32.0	22	257	14
(Pin 1 shows leakage on short test)					
35HB8	1	32.0	20	13	25
35HB8 Test 2	2	32.0	22	679	58
36	2	6.3	32	230	45
36AM3 *	4	32.0	18	5	467
37	3	6.3	37	23	45
38	3	6.3	36	230	45
39 (44)	2	6.3	30	230	45
40	1	5	28	23	4
TZ40	3	7.5	36	30	4
41	3	6.3	32	234	56
42	3	6.3	29	234	56
43	3	25	31	234	56
45	3	2.5	32	23	4
45Z3	3	50	24	26	47
46	3	2.5	35	234	5
47	3	2.5	41	234	5
48	3	32	25	234	56
49	2	2	38	234	5
50 (585)	3	7.5	42	23	4
50BM8	1	50.0	20	19	58
50BM8 Test 2	1	50.0	20	367	25
50DC4 *	4	25.0	18	5	67
50EH5 □	3	50.0	17	2567	14
50FE5	3	50.0	17	345	78
50FK5	2	50.0	24	2567	14
52	3	6.3	30	234	5
53 Tests 1-2	3–3	2.5	32–32	23–56	47–47
55 Tests 1-2	2–1	2.5	32–40	20–3	56–56
55 Test 3	1	2.5	40	4	56
56	2	2.5	30	23	45
57	2	2.5	30	230	456
57A (AS)	3	6.3	34	230	456
58	3	2.5	35	230	456
58AS	3	6.3	35	230	456
59	3	2.5	29	2345	67
60FX5 □	2	50.0	22	2567	14
64	1	6.3	22	230	45
65	2	6.3	28	230	45
67	3	6.3	37	23	45
68	3	6.3	37	230	45
75 Tests 1-2	1–1	6.3	20–38	20–3	56–56
75 Test 3	1	6.3	38	4	56
76	2	6.3	33	23	45
77	2	6.3	30	230	456
78	3	6.3	31	230	456
79 Tests 1-2	3–3	6.3	30–30	23–50	46–46

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
18J6	1	19.6	23	16	2457
18J6 Test 2	1	19.6	23	25	1467
19 Tests 1-2	3-3	2	37-39	23-45	6-6
19CL8	2	19.6	21	12	34
19CL8 Test 2	2	19.6	21	679	48
19EA8	2	19.6	20	19	58
19EA8 Test 2	2	19.6	20	236	57
19EZ8	1	19.6	20	89	467
19EZ8 Test 2	1	19.6	20	67	489
19EZ8 Test 3	1	19.6	20	23	14
19HV8	2	19.6	22	679	58
19HV8 Test 2	0	19.6	68	12	35
20	2	6 3	48	23	4
20EQ7	2	19.6	24	267	135
20EQ7 Test 2	1	19.6	55	8	35
21EX6	3	19.6	16	580	37
22	1	2 5	56	230	4
22DE4	3	25.0	18	5	38
24A	2	2.5	32	230	45
25A7 Tests 1-2 ...	3-3	25	27-23	345-6	78-17
25AC5	3	25	31	35	78
25B5 Tests 1-2 ...	3-3	25	37-46	24-34	56-256
25B6	3	25	23	345	78
25B8 Tests 1-2 ...	2-2	25	25-25	340-58	17-17
25DK4	4	25.0	18	5	37
25DN6	3	25	17	580	37
25DQ6	3	25	17	450	78
25EH5 □	3	25	17	2567	14
25F5	2	25.0	22	2567	14
25GF6/30P4	3	25.0	16	450	78
26Z5W *	4	25.0	18	6	89
26Z5W Test 2	4	25.0	18	1	39
27	2	2.5	32	23	45
29	2	2.5	36	23	456
30	2	2	35	23	4
31	2	2	40	23	4
32	2	2	42	230	4
32ET5 □	3	32.0	19	2567	14
32L7 Tests 1-2 ...	3-3	32	21-18	345-6	78-17
33	3	2	39	234	5
ECC33	2	6.3	24	12	37
ECC33 Test 2	2	6.3	24	45	67
EL33/6AG6	3	6.3	18	345	78
34	2	2	40	230	4
35 (51)	2	2.5	30	230	45
35DZ8	0	32	64	19	58
35DZ8 Test 2	3	32	16	367	25
35EH5 □	3	32.0	17	2567	14

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
12FQ8	1	12.6	20	78	123569
12FQ8 Test 2	1	12.6	20	67	123589
12FQ8 Test 3	1	12.6	20	12	356789
12FQ8 Test 4	1	12.6	20	23	156789
12FR8	0	12.6	66	19	25
12FR8 Test 2	0	12.6	63	367	5
12FR8 Test 3	0	12.6	96	8	25
12FX8	0	12.6	63	12	57
12FX8 Test 2	0	12.6	75	39	57
12FX8 Test 3	0	12.6	64	68	5
12GA6	0	12.6	67	16	24
12GA6 Test 2	0	12.6	76	57	24
12GC6 □	2	12.6	21	4580	37
12L8G Tests1-2 ..	3–3	12.6	20–22	345–158	27–27
12R5	2	12.6	22	2567	14
12Z3	3	12.6	25	2	34
13DE7	1	12.6	20	67	58
	(2 & 3 read short)				
13DE7 Test 2	1	12.6	18	123	59
13DR7 □	1	12.6	19	67	58
13DR7 Test 2	3	12.6	16	123	59
13GC8/30PL1	2	12.6	21	12	35
13GC8 Test 2	2	12.6	21	689	57
14	2	12.6	30	230	45
14GT8	2	12.6	24	2	35
14GT8 Test 2	2	12.6	24	6	15
14GT8 Test 3	0	12.6	67	89	57
14Z3	3	12.6	25	2	34
15	2	2	36	230	45
15EA7	0	12.6	70	45	68
15EA7 Test 2	3	12.6	16	12	38
17	3	12.6	40	23	45
17D4	0	19.6	59	5	38
17DE4	3	19.6	18	5	38
18	3	12.6	31	234	56
18AK5	1	19.6	21	156	247
18AQ5	1	19.6	23	1567	24
18C51	1	19.6	20	34	256789
18C51 Test 2	1	19.6	20	67	234589
18DZ8	0	19.6	64	19	58
18DZ8 Test 2	3	19.6	16	367	25
18FW6	2	19.6	21	1256	47
18FX6	2	19.6	22	167	24
18FX6 Test 2	2	19.6	25	567	24
18FY6	0	19.6	63	17	24
18FY6 Test 2	0	19.6	95	5	24
	(Good = 50)				
18FY6 Test 3	0	19.6	95	6	24
	(Good = 50)				

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
12DT8 Test 2	1	12.6	19	67	58
12DU7	1	12.6	100	9	25
(Good = 55)					
12DU7 Test 2	1	12.6	71	7	25
12DU7 Test 3 ...	0	12.6	63	36	125
12DV7 *	0	6.3	100	6	789
(Good = 40)					
12DV7 Test 2	1	6.3	67	3	19
12DV7 Test 3	1	6.3	67	2	19
12DV8	3	12.6	18	367	25
12DV8 Test 2	1	12.6	31	9	158
12DV8 Test 3	1	12.6	31	1	589
12DW5	1	12.6	21	1369	57
12DW7 *	2	6.3	22	12	345
12DW7 Test 2	0	6.3	61	67	458
12DW8	0	12.6	63	67	58
(Pin 8 shows leakage on short test)					
12DW8 Test 2	0	12.6	61	12	35
12DW8 Test 3	0	12.6	68	9	58
12DY8	1	12.6	100	8	579
(Good = 55)					
12DY8 Test 2	0	12.6	64	36	125
12DZ6	3	12.6	18	1256	47
12EA6	1	12.6	25	56	1247
12EC8	1	12.6	40	2	135
12EC8 Test 2	1	12.6	57	67	589
12ED5 □	2	12.6	22	2567	14
12EG6	0	12.6	63	16	24
12EG6 Test 2	0	12.6	77	57	24
12EH5 □	3	12.6	17	2567	14
12EK6	1	12.6	20	1256	47
12EL6	1	12.6	40	2	147
12EL6 Test 2	1	12.6	35	5	47
12EL6 Test 3	1	12.6	35	6	47
12EM6	0	12.6	22	36	125
(Good tube reads 50)					
12EM6 Test 2	0	12.6	62	9	25
12EN6	1	12.6	19	345	78
12EQ7	2	12.6	24	267	135
12EQ7 Test 2	1	12.6	55	8	35
12EZ6	0	12.6	61	1256	47
12FB5/30P12 □ ...	3	12.6	18	1279	35
12FK6	0	12.6	61	17	24
12FK6 Test 2	0	12.6	96	6	24
12FK6 Test 3	0	12.6	96	5	24
12FM6	0	12.6	63	17	24
12FM6 Test 2	1	12.6	38	5	24
12FM6 Test 3	1	12.6	38	6	24

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
10	3	7.5	56	45	6
10DE7	1	12.6	22	**123**	**59**
(Set line control at 46 for all tests)					
10DE7 Test 2	1	12.6	23	67	**58**
(2 and 3 also read short)					
10EC7/10F18 □ ...	2	12.6	22	2789	**135**
10Y	3	7.5	42	23	4
11CY7 □	1	12.6	21	67	**58**
11CY7 Test 2	1	12.6	20	**123**	**59**
12A	2	5	26	23	4
12A5	3	6.3	32	234	**56**
12A6	3	12.6	32	345	**78**
12A7 Tests 1-2 ...	2-1	12.6	29-20	230-5	**67-67**
12AE7 *	0	6.3	62	12	**345**
12AE7 Test 2	0	6.3	62	67	**458**
12AF3 □	4	12.6	18	**29**	**50**
12AH7 Tests 1-2 ..	3-3	12.6	30-30	13-56	**27-67**
12AS5 □	3	12.6	19	**2567**	**14**
12B8 Tests 1-2 ...	2-3	12.6	26-26	340-58	**17-67**
12BV7	1	6.3	19	23789	**16**
12C8 Tests 1-2 ...	3-1	12.6	41-38	360-4	**78-78**
12C8 Test 3	1	12.6	38	5	**78**
12CR6	2	12.6	23	567	**14**
12CR6 Test 2	1	12.6	36	2	**14**
12CS6	0	12.6	57	16	**23**
12CS6 Test 2	0	12.6	68	57	**23**
12CX6	1	12.6	23	256	**137**
12DB5	2	12.6	24	**1369**	**247**
12DE8	0	12.6	86	678	**159**
12DE8 Test 2	0	12.6	59	3	**25**
12DF5	1	6.3	31	1	**39**
12DF5 Test 2	1	6.3	31	6	**89**
12DF7 *	0	6.3	65	67	**89**
12DF7 Test 2	0	6.3	65	12	**39**
12DK7	0	12.6	70	37	**25**
12DK7 Test 2	1	12.6	40	6	**25**
12DK7 Test 3	1	12.6	34	9	**25**
12DL8	0	12.6	62	367	**25**
12DL8 Test 2	0	12.6	94	9	**58**
12DL8 Test 3	0	12.6	94	1	**58**
12DQ6	3	12.6	16	450	**78**
12DQ7 □ *	2	6.3	21	**23789**	**16**
12DS7	0	12.6	87	9	**58**
12DS7 Test 2	0	12.6	87	1	**58**
12DS7 Test 3	0	12.6	74	67	**358**
12DT5 □	3	12.6	18	**1369**	**57**
12DT7 *	0	6.3	65	67	**458**
12DT7 Test 2	0	6.3	65	12	**345**
12DT8	1	12.6	19	12	**35**

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
6GA8	2	6.3	22	67	58
6GA8 Test 2	2	6.3	22	12	35
6GC5 □	3	6.3	17	13689	57
6GC6 □	2	6.3	21	4580	37
6GH8	2	6.3	20	236	57
6GH8 Test 2	2	6.3	20	19	58
6GK5 □	1	6.3	20	25	147
(No shorts or element test on pins 1 & 7)					
6GK6 □	2	6.3	20	278	1359
6GM6	2	6.3	20	156	247
6GM8/ECC86	2	6.3	22	12	35
6GM8 Test 2	2	6.3	22	67	58
6GN8	2	6.3	21	789	56
6GN8 Test 2	0	6.3	62	23	15
6GY8	1	6.3	17	12	4
6GY8 Test 2	1	6.3	17	39	48
6GY8 Test 3	1	6.3	95	6	47
6HC8	3	6.3	19	367	25
6HC8 Test 2	2	6.3	24	19	58
6HS8	1	6.3	20	237	15689
6HS8 Test 2	1	6.3	20	278	13569
7DJ8/PCC88	2	7.5	21	67	58
7DJ8 Test 2	2	7.5	21	12	35
7ED7/30F5	2	7.5	20	2789	135
7EY6	3	7.5	18	345	78
8AW8	1	7.5	19	23	15
8AW8 Test 2	2	7.5	20	789	56
8BQ5 □	1	9.45	20	1279	35
8CS7	2	7.5	26	67	58
8CS7 Test 2	2	7.5	22	13	59
8CX8	1	7.5	19	789	46
8CX8 Test 2	1	7.5	19	23	14
8CY7	1	7.5	18	123	59
8CY7 Test 2	1	7.5	20	67	58
(Pins 2 and 3 also read short)					
8EB8	2	7.5	22	789	56
8EB8 Test 2	0	7.5	63	23	15
8EM5 □	3	7.5	18	1369	57
8ET7	2	7.5	23	789	56
8ET7 Test 2	1	7.5	46	3	15
8ET7 Test 3	1	7.5	46	2	15
9BR7 *	2	5.0	18	12	345
9BR7 Test 2	2	5.0	21	6	458
9BR7 Test 3	2	5.0	21	7	458
9CL8	1	7.5	20	12	35
9CL8 Test 2	1	7.5	19	679	58
9EF6	1	12.6	22	345	28
(Line test at 44)					

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
6EH8 □	2	6.3	21	789	156
6EH8 Test 2	2	6.3	21	23	156
6EJ7/EF184	2	6.3	21	2789	135
6EM5 □	3	6.3	18	1369	57
6EM7	1	6.3	23	45	68
6EM7 Test 2	3	6.3	16	12	38
6EQ7	2	6.3	24	267	135
6EQ7 Test 2	1	6.3	55	8	35
6ER5	2	6.3	20	256	147
6ES5	2	6.3	20	25	147
6ES8	2	6.3	20	12	35
6ES8 Test 2	2	6.3	20	67	58
6EU7	1	6.3	22	56	14
6EU7 Test 2	1	6.3	22	78	19
6EU8	2	6.3	19	179	58
6EU8 Test 2	2	6.3	19	23	56
6EV5 □	2	6.3	22	156	247
6EV7	2	6.3	23	67	58
6EV7 Test 2	2	6.3	23	12	35
6EW6	2	6.3	20	1567	24
6EW7 □	2	6.3	27	67	58
6EW7 Test 2	4	6.3	18	123	59
6EX6	3	6.3	15	580	37
6EY6	3	6.3	18	345	78
6EZ5	3	6.3	18	345	78
6EZ8	1	6.3	20	89	467
6EZ8 Test 2	1	6.3	20	67	489
6EZ8 Test 3	1	6.3	20	23	14
6FA7	1	6.3	22	789	1356
6FA7 Test 2	1	6.3	22	178	3569
6FA7 Test 3	1	6.3	38	3	156789
6FE5	3	6.3	17	345	78
6FG5	2	6.3	21	156	247
6FG7 □	2	6.3	22	679	358
6FG7 Test 2	2	6.3	21	12	358
6FH5 □	2	6.3	20	25	147
6FH6	3	6.3	15	450	78
6FM8	0	6.3	60	2	35
6FM8 Test 2	0	6.3	60	6	15
6FM8 Test 3	0	6.3	64	89	57
6FQ5 □	1	6.3	20	25	147
(No shorts or element test on pins 1 & 7)					
6FS5 □	1	6.3	20	156	247
(No shorts or element test on pins 2 & 7)					
6FV6	2	6.3	22	156	47
6FV8	2	6.3	21	679	58
6FV8 Test 2	2	6.3	21	12	35
6FW5	3	6.3	17	158	37

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
6CY7	1	6.3	21	67	58
(2 and 3 also show short)					
6CY7 Test 2	1	6.3	20	123	59
6DA4	3	6.3	16	5	37
6DA5 □	1	6.3	22	17	25
6DA5 Test 2	4	6.3	0	3789	125
(Eye closed)					
6DA5 Test 3	4	6.3	0	389	1257
(Eye open)					
6DB5	3	6.3	20	1369	247
6DC8/EBF89	2	6.3	22	1269	35
6DC8 Test 2	1	6.3	36	7	35
6DC8 Test 3	1	6.3	36	8	35
6DE4	4	6.3	18	5	38
6DE7	1	6.3	21	123	59
6DE7 Test 2	1	6.3	22	67	58
(2 and 3 also show short)					
6DJ8/ECC88	2	6.3	21	67	58
6DJ8 Test 2	2	6.3	21	12	35
6DK6	2	6.3	20	1567	24
6DL7 Eye OP	4	6.3	0	5	478
6DL7 Eye CL	4	6.3	0	356	478
(No open element test)					
6DN7	2	6.3	24	45	68
6DN7 Test 2	4	6.3	18	12	38
6DQ5	1	6.3	19	14580	367
6DR7 □	2	6.3	21	123	59
6DR7 Test 2	1	6.3	20	67	58
6DS5	1	6.3	19	1567	24
6DT5 □	3	6.3	18	1369	57
6DT8	1	6.3	19	12	35
6DT8 Test 2	1	6.3	19	67	58
6DW5	1	6.3	21	1369	57
6DZ8	0	6.3	64	19	58
6DZ8 Test 2	3	6.3	16	367	25
6EA7	0	6.3	60	45	68
6EA7 Test 2	3	6.3	16	12	38
6EA8	2	6.3	20	19	58
6EA8 Test 2	2	6.3	20	236	57
6EB5	3	6.3	38	7	14
6EB5 Test 2	3	6.3	38	2	45
6EB8	0	6.3	63	23	15
6EB8 Test 2	2	6.3	21	789	56
6EC7/6F18 □	2	6.3	22	2789	135
6EF6	4	6.3	18	345	78
6EH5 □	3	6.3	17	2567	14
6EH7/EF183	2	6.3	21	2789	135

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
5CQ8	1	5.0	16	19	58
5CQ8 Test 2	1	5.0	16	236	57
5CR8	2	5.0	20	19	58
5CR8 Test 2	2	5.0	19	267	35
5EA8	2	5.0	19	19	58
5EA8 Test 2	2	5.0	19	236	57
5EH8 □	2	5.0	20	789	156
5EH8 Test 2	2	5.0	20	23	156
5EU8	2	5.0	19	179	58
5EU8 Test 2	2	5.0	19	23	56
5FV8	2	5.0	21	679	58
5FV8 Test 2	2	5.0	21	12	35
5GH8	2	5.0	20	236	57
5GH8 Test 2	2	5.0	20	19	58
6AD4 (Adapt. BW)	1	6.3	20	18	56
6AF3 □	4	6.3	18	29	50
6AL3/EY88 □	4	6.3	19	1236789	50
6AM5/EL91	1	6.3	22	157	24
6AQ8/ECC85	2	6.3	21	12	35
6AQ8 Test 2	2	6.3	21	67	58
6BE8/6BE8A	2	6.3	20	12	35
6BE8/6BE8A Test 2	2	6.3	20	679	358
6BJ8	2	6.3	22	78	59
6BJ8 Test 2	2	6.3	22	6	35
6BJ8 Test 3	2	6.3	22	1	25
6BM8	1	6.3	20	19	58
6BM8 Test 2	1	6.3	20	367	25
6BW8	1	6.3	17	689	47
6BW8 Test 2	1	6.3	17	1	234
6BW8 Test 3	1	6.3	17	3	124
6BY7	1	6.3	19	2789	135
(No shorts or element test on 1 and 3)					
6C9 Adapt CJ	2	6.3	21	789	56
6C9 Test 2	2	6.3	21	123	50
6CH6/EL821	4	6.3	19	2789	35
6CL8	2	6.3	21	12	34
6CL8 Test 2	2	6.3	21	679	48
6CM4 □	1	6.3	20	12689	357
6CM8	2	6.3	21	267	35
6CM8 Test 2	0	6.3	63	19	58
6CR4 □	2	6.3	18	134569	28
6CS7	2	6.3	26	67	58
6CS7 Test 2	2	6.3	22	13	59
6CU8	1	6.3	20	89	15
6CU8 Test 2	1	6.3	19	237	56
6CW4 Adapt CI ..	1	6.3	20	12	35
6CY5 □	2	6.3	21	156	247

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
3D21A*	4	6.3	19	460	278
3DK6 (Adapt BX)	2	5.0	20	1567	24
3EH7 (Adapt BZ)	2	5.0	21	2789	135
3EJ7 (Adapt BZ) ..	2	5.0	21	2789	135
3ER5 □	2	2.5	20	256	147
3FQ5 □	1	2.5	20	25	147
(No shorts or element test on pins 1 & 7)					
3GK5 □	1	2.5	20	25	147
(No shorts or element test on pins 1 & 7)					
3LE4	2	1.4	34	236	18
3LF4*	2	1.4	30	236	18
3Q4	2	1.4	33	2346	17
3Q5*	3	1.4	27	345	17
4A6 Tests 1-2	2-3	2	35-46	34-56	8-8
4AU6 (Adapt CA)	2	5	22	1256	47
4BN6 (Adapt. CA)	1	5	36	2567	13
(Good=23)					
4BS8 (Adapt BY)	2	5.0	22	12	34
4BS8 Test 2	2	5.0	22	67	48
4BU8 (Adapt. BY)	1	5.0	20	2367	15
4BU8 Test 2	1	5.0	20	2789	15
4BX8	1	5	19	12	35
4BX8 Test 2	1	5	19	67	58
4BZ6 (Adapt CA)	1	5.0	18	1567	23
(No open element test on pins 5 and 7)					
4CE5 □ (Adapt CA)	2	5.0	20	156	247
(No open element test on pin 5)					
4CM4 □ (Adapt BY)	1	5.0	20	12689	357
4CS6 (Adapt. CA)	0	5.0	57	16	23
4CS6 Test 2	0	5.0	68	57	23
4CY5	1	5	48	56	1247
4DE6 (Adapt. CA)	2	5.0	21	1567	23
(No open element test on Pin 5)					
4DK6 (Adapt CA)	2	5.0	20	1567	24
4DT6 (Adapt. CA)	1	5	17	1567	24
4ES8 (Adapt BY)	2	6.0	20	12	35
4ES8 Test 2	2	5.0	20	67	58
4EW6 (Adapt CA)	2	5.0	20	1567	24
5A6 □	3	2.5	24	13678	9
5BT8	1	5	27	1	35
5BT8 Test 2	1	5	25	2	35
5BT8 Test 3	1	5	18	678	59
5BW8	2	5.0	19	689	57
5BW8 Test 2	0	5.0	59	3	25
5BW8 Test 3	0	5.0	59	1	25
5CM8	2	5.0	21	267	35
5CM8 Test 2	0	5.0	58	19	58

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
2B7 Test 1-2	3–1	2.5	47–40	230–5	67–67
2B7 Test 3	1	2.5	40	4	67
2C22	3	6.3	22	0	78
(Short Top Caps Together)					
2C26	3	6.3	35	0	78
2CW4 Adapt CI ..	1	2.0	20	12	35
2CY5 □	2	2.5	21	156	247
2E5	2	2.5	44	23	56
2E5 Eye CL-OP ..	4–4	2.5	0–0	24–4	356–2356
2E22	3	6.3	25	2340	5
2E24	3	2.5	22	350	27
(In Short Test, levers 1, 4 and 6 should show short when moved to "U" position)					
2E25	3	6.3	28	4580	2
2E26 □	3	6.3	21	350	1246
2E30	3	2.5	26	1256	34
2E31	0	1.4	70	124	3
2E32	0	1.4	70	124	3
2E35	0	1.4	75	124	3
2E36	0	1.4	75	124	3
2E41	0	1.4	77	1235	4
2E42	0	1.4	77	1235	4
2EA5 □	2	2.5	20	156	237
2EN5	0	2	64	7	35
2EN5 Test 2	0	2	64	2	35
2ER5 □	2	2.0	20	256	147
2FH5 □	2	2.5	20	25	147
2FQ5 □	1	2.0	20	25	147
(No shorts or element test on pins 1 & 7)					
2FS5 □	1	2.0	20	156	247
(No shorts or element test on pins 2 & 7)					
2GK5 □	1	2.0	20	25	147
(No shorts or element test on pins 1 & 7)					
2S/4S (G-2)	1	2.5	45	3	45
2S/4S Test 2	1	2.5	45	2	45
2V3 (Good=20) .	1	2.5	96	0	7
2W3	2	2.5	36	4	8
2Z2 (G84) .	3	2.5	56	2	4
3AF4 (Adapt BX)	2	5.0	62	17	2356
3B5*	2	1.4	35	345	27
3B7 (1291)	1	1.4	33	23	18
3B7 Test 2	1	1.4	33	67	18
3B26	4	2.5	26	0	7
3BU8 (Adapt. BX)	1	5	20	2367	15
3BU8 Test 2	1	5	20	2789	15
3CY5 (Adapt BX)	2	5	21	156	247
3D6 (1299)	2	1.4	30	236	18

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
1F7 (1F7GV) ...	1	2	35	360	7
1F7 Tests 2-3 ...	1-1	2	95-95	5-4	7-7
1G3	1	1.4	98	0	1345678
(Good = 26)					
(For Element Test, use levers "7" & "0" only.)					
1G4	1	1.4	30	35	7
1G5	2	2	39	345	7
1G6 Tests 1-2 ...	1-1	1.4	35-35	34-56	7-7
1H2	4	1.4	82	0	1469
1H4	2	2	41	35	7
1H5 Tests 1-2 ...	1-1	1.4	33-40	30-5	7-7
1H6 Tests 1-2	1-1	2	30-40	36-5	7-7
1H6 Test 3	1	2	40	4	7
1J3	4	1.4	95	0	1345678
(Good = 25)					
(For Element Test, use levers "7" & "0" only.)					
1J5	2	2	38	345	7
1J6 Tests 1-2	2-2	2	39-39	34-56	7-7
1K3	4	1.4	95	0	1345678
(Good = 25) (For Element Test, use levers "7" & "0" only)					
1LA4	2	1.4	40	236	8
1LA6 Tests 1-2	1-1	1.4	30-95	34-256	8-8
(Good = 40 on Test 2)					
1LB4	2	1.4	40	236	8
1LC5	1	1.4	32	2346	58
1LC6 Tests 1-2 ...	1-1	1.4	32-80	34-256	8-8
1LD5 Tests 1-2 ..	1-1	1.4	32-95	236-4	8-8
(Good = 20 on Test 2)					
1LE3	2	1.4	37	26	8
1LH4 Tests 1-2	1-1	1.4	40-95	26-4	8-8
(Good = 20 on Test 2)					
1LN5	2	1.4	40	2346	58
1N2	4	1.4	75	0	78
1N5	1	1.4	27	340	7
1N6 Tests 1-2 ...	2-1	1.4	38-95	345-6	7-7
(Good = 20 on Test 2)					
1P5	1	1.4	31	340	7
1Q5	2	1.4	33	345	7
1SA6	2	1.4	30	3468	7
1SB6 Tests 1-2 ...	1-1	1.4	36-90	348-5	7-7
1V (KR-1)	3	6.3	24	2	34
2A3	3	2.5	28	23	4
2A4 Tests 1-2	3-3	2.5	25-25	5-3	7-57
(No Short Test)					
2A5 (KR-25)	3	2.5	36	234	56
2A6 Tests 1-2	3-1	2.5	26-40	20-4	56-56
2A6 Test 3	1	2.5	40	3	56
2A7 Tests 1-2	2-2	2.5	32-64	5-2340	67-67

3413-A Triplett Roll Chart

SUPPLEMENT To Roll Chart 84-70-020162

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
00A	2	5	30	23	4
01A	2	5	45	23	4
OA2 (Good = 10)	4	Off	40	15	247
OB2 (Good = 10)	4	Off	95	15	247
OC2 □	4	Off	100	15	247
(Good = 35. Tube normally shows leakage)					
0Y4	4	Off	22	5	378
1A3	1	1.4	75	26	37
1A4	1	2	28	230	4
1A5	2	1.4	50	345	7
1A6 Tests 1-2	2-1	2	50-95	34-250	6-6
1A7 Tests 1-2	1-1	1.4	31-95	56-340	7-7
1AB5	1	1.4	25	236	78
1AH5/DAF96	1	1.4	32	456	37
1AH5/DAF96 Test 2	1	1.4	53	3	7
1B4	1	2	27	230	4
1B4P (951)	2	2	35	230	4
1B5 (25S)	1	2	31	25	6
1B5 Tests 2-3	1-1	2	40-40	4-3	6-6
1B7 Tests 1-2	1-1	1.4	26-95	56-340	7-7
1C5	2	1.4	37	345	7
1C6 Tests 1-2	2-1	2	42-68	34-250	6-6
1C7 Tests 1-2	2-1	2	41-56	56-340	7-7
1C8 (Adapt BW)	0	1.4	70	2678	5
1C21	4	Off	45	5	27
1D3 (Adapt. BW)	1	1.4	25	18	4
1D5	2	2	39	340	7
1D5GP	2	2	33	340	7
1D7 Tests 1-2	1-1	2	31-95	56-340	7-7
1D8 Tests 1-2	2-2	1.4	48-37	60-345	7-7
1D8 Test 3	1	1.4	95	8	7
1DN5	0	1.4	50	4	1
(Good tube reads 40)					
1DN5 Test 2	1	1.4	29	236	41
1E3	3	1.4	30	18	55
1E4	2	1.4	45	35	7
1E5	1	2	35	340	7
1E7 Tests 1-2	2-2	2	30-30	348-568	7-7
1E8 (Adapt BW)	0	1.4	70	2678	5
1F4	3	2	47	234	5
1F5	2	2	36	345	7
1F6 Tests 1-2	1-1	2	37-95	230-4	6-6
1F6 Test 3	1	2	95	5	6

3413–A Triplett Roll Chart Supplement

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
79 Tests 1-2	3-3	6.3	30–30	23–50	46–46
82 (82V)	3	2.5	24	2	4
82 Test 2	3	2.5	24	3	4
83 (83V)	3	5	26	2	4
83 Test 2	3	5	26	3	4
85 Tests 1-2	3-1	6.3	45–47	20–3	56–56
85 Test 3	1	6.3	47	4	56
86M	3	6.3	37	35	78
88 Tests 1-2	3–3	5	26–26	2–3	4–4
88M	3	6.3	31	340	578
88S	3	6.3	32	230	456
89	3	6.3	32	230	56
89RS Tests 1-2 ...	3–1	6.3	36–24	20–4	357–37
89RS Test 3	1	6.3	24	6	37
95	3	2.5	36	234	56
98 Tests 1-2	3–3	6.3	26–26	2–3	45–45
99 (99X X99)	2	2.5	65	23	4
99V/V99	2	2.5	65	13	4
117N7	3	110	20	345	678
117N7 Test 2	3	110	15		78
(Allow Tube to Heat Up. Return Lever 7 to "U" Position. Good Tube Will Kick to 70.)					
117P7	3	110	22	345	678
117P7 Test 2	3	110	15		78
(Allow Tube to Heat Up. Return Lever 7 to "U" Position. Good Tube Will Kick to 70.)					

3413–A Triplett Roll Chart Supplement

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
22	1	2.5	56	230	4
24A	2	2.5	32	230	45
26	2	1.4	38	23	4
27	2	2.5	32	23	45
29	2	2.5	36	23	456
30	2	2	35	23	4
31	2	2	40	23	4
32	2	2	42	230	4
33	3	2	39	234	5
34	2	2	40	230	4
35 (51)	2	2.5	30	230	45
36	2	6.3	32	230	45
37	3	6.3	37	23	45
38	3	6.3	36	230	45
39 (44)	2	6.3	30	230	45
40	1	5	28	23	4
41	3	6.3	32	234	56
42	3	6.3	29	234	56
43	3	25	31	234	56
45	3	2.5	32	23	4
46	3	2.5	35	234	5
47	3	2.5	41	234	5
48	3	32	25	234	56
49	2	2	38	234	5
50 (585)	3	7.5	42	23	4
52	3	6.3	30	234	5
53 Tests 1-2	3–3	2.5	32–32	23–56	47–47
55 Tests 1-2	2–1	2.5	32–40	20–3	56–56
55 Test 3	1	2.5	40	4	56
56	2	2.5	30	23	45
57	2	2.5	30	230	456
57A (AS)	3	6.3	34	230	456
58	3	2.5	35	230	456
58AS	3	6.3	35	230	456
59	3	2.5	29	2345	67
64	1	6.3	22	230	45
65	2	6.3	28	230	45
67	3	6.3	37	23	45
68	3	6.3	37	230	45
70A7	3	70	23	345	678
70A7 Test 2	3	70	20		167
(Allow Tube to Heat Up, Return Levers 6 & 7 to "U" Position. Good Tube Will Kick to 70).					
71A	3	5	47	23	4
72	4	2.5	35	0	4
75 Tests 1-2	1–1	6.3	20–38	20–3	56–56
75 Test 3	1	6.3	38	4	56
76	2	6.3	33	23	45
77	2	6.3	30	230	456
78	3	6.3	31	230	456

Due to limited space on roll chart it was necessary to remove these old type tubes from the roll chart which are very seldom used, to make room for new type tubes more frequently used.

3413-A Triplett Roll Chart Supplement

TUBE TYPE	KNOBS A Cir	B Fil	C Load	LEVER POSITION U Up	D Down
00A	2	5	30	23	4
01A	2	5	45	23	4
OA2 (Good = 10)	4	Off	40	15	247
1A6 Tests 1-2	2-1	2	50-95	34-250	6-6
1B4	1	2	27	230	4
1D5	2	2	39	340	7
1F6 Tests 1-2	1-1	2	37-95	230-4	6-6
1F6 Test 3	1	2	95	5	6
1F7 (1F7GV)	1	2	35	360	7
1F7 Tests 2-3	1-1	2	95-95	5-4	7-7
1J5	2	2	38	345	7
2B6 Tests 1-2	2-3	2.5	95-50	2-34	67-57
2S/4S (G-2)	1	2.5	45	3	45
2S/4S Test 2	1	2.5	45	2	45
6B5 Tests 1-2	3-3	6.3	45-63	24-34	356-256
6C6	1	6.3	21	230	456
6C7 Tests 1-2	1-1	6.3	21-40	20-4	67-67
6C7 Test 3	1	6.3	40	5	67
6C8 Tests 1-2	2-2	6.3	27-27	30-56	47-78
6D5	3	6.3	32	35	78
6D6	3	6.3	27	2340	56
6D7	2	6.3	28	230	467
6D8 Tests 1-2	2-2	6.3	34-42	56-340	78-78
6E5	2	6.3	36	23	56
6E5 Eye CL	4	6.3	0	24	356
6E5 Eye OP	4	6.3	0	4	2356
6E6 Tests 1-2	3-3	6.3	31-31	23-56	47-47
6E7	2	6.3	28	230	467
6F7 Tests 1-2	3-3	6.3	43-82	230-45	67-67
6G5 (6U5)	2	6.3	36	23	56
6G5 Eye CL	4	6.3	0	24	356
6G5 Eye OP	4	6.3	0	4	2356
6G6	3	6.3	36	345	78
6G6G	2	6.3	28	345	28
6G7 Tests 1-2	3-1	6.3	36-24	20-4	357-37
6G7 Test 3	1	6.3	24	6	37
6H6 Tests 1-2	1-1	6.3	25-25	3-5	47-78
6SB7Y Tests 1-2	2-1	6.3	22-34	45-348	167-567
6Z4 (84, KR-98)	3	6.3	26	2	45
6Z4 Test 2	3	6.3	26	3	45
14	2	12.6	30	230	45
15	2	2	36	230	45
17	3	12.6	40	23	45
18	3	12.6	31	234	56
19 Tests 1-2	3-3	2	37-39	23-45	6-6
20	2	6.3	48	23	4